SHEARWATER POLYMERS, INC.

CATALOG

POLYETHYLENE GLYCOL DERIVATIVES

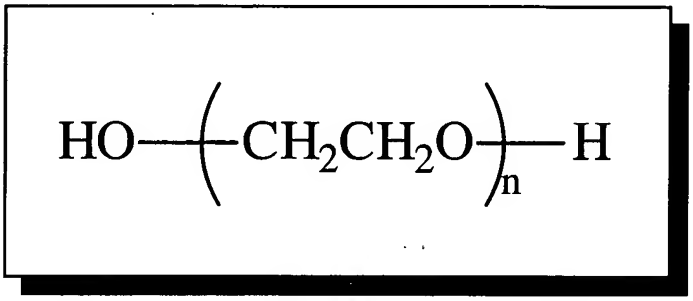
1997-1998

CATALOG

SHEARWATER POLYMERS, INC.

FUNCTIONALIZED BIOCOMPATIBLE POLYMERS FOR RESEARCH AND PHARMACEUTICALS

POLYETHYLENE GLYCOL and DERIVATIVES



PEG

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July 1997

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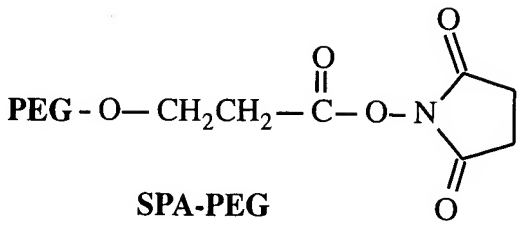
GROUP THREE A - NHS ACTIVE ESTERS

PEG Succinimidyl Propionate



SPA-PEG

The succinimidyl succinate (SS-PEG) described on the preceding page possesses an ester link in its backbone and thus has the property (sometimes desirable, sometimes undesirable) of undergoing hydrolysis in vivo. More stable PEG conjugates can be made by use of the succinimidyl derivative of PEG propionic acid (SPA-PEG), which does not possess this ester linkage and which has nearly ideal reactivity for protein modification. The corresponding succinimidyl derivative of carboxymethylated PEG (SCM-PEG) also has only ether linkages in the backbone, but this compound is extremely reactive and difficult to work with (see Table, page 48). SPA-PEG is chromatographically purified and is 99% pure. Note also that the M-PEG used for these preparations has virtually undetectable diol content.

Reference:
1. J. M. Harris, et al., unpublished results.
2. U.S. Patent pending.

Item No.	Description	Quantity	Price ($)
M-SPA-5000	Methoxy-PEG-SPA, MW 5,000	0.5 g	**FLUKA**
		1 g	**FLUKA**
		10 g	1,440
M-SPA-2000	Methoxy-PEG-SPA, MW 2,000	0.5 g	95
		1 g	150
M-SPA-20000	Methoxy-PEG-SPA, MW 20,000	0.5 g	115
		1 g	180
SPA-3400	PEG-$(SPA)_2$, MW 3,400	0.5 g	95
		1 g	150

Other molecular weights are available - see page 6

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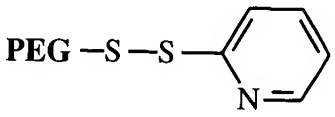
GROUP FOUR - SULFHYDRYL-SELECTIVE PEGs

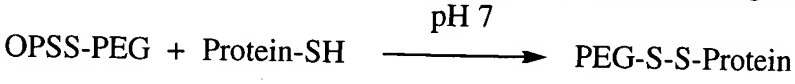
PEG-ORTHOPYRIDYL-DISULFIDE



OPSS-PEG

PEG-orthopyridyl-disulfide (OPSS-PEG) reacts readily with sulfhydryl groups. One application is as a source of PEG-SH, provided by reaction of OPSS-PEG with dithiothreitol (DTT) (1,2).

A second application is reaction with sulfhydryl groups to give protein pegylation (3).



Since the protein is linked by a disulfide linkage, this pegylation can also be reversed by adding reducing agents such as DTT (3). The only other reversible protein pegylation of which we are aware is hydrolysis of ester linkages in protein pegylated by PEG succinimidyl succinate (SS-PEG) (4). Reactions of OPSS-PEG with thiols are over in minutes at pH 7. Purity 70-80%.

References:

1. M. Yokoyama, T. Okano, et al., BBRC, **164**, 1234 (1989).
2. J. N. Herron, C. A. Gentry and S. S. Davies,J. Controlled Release, **28**, 155-166 (1994).
3. C. Woghiren, B. Sharma and S. Stein, Bioconj. Chem., **4**, 314 (1993).
4. M. M. Vestling, C. M. Murphy, D. A. Keller, C. Fenselau, J. Dedinas, D. L. Ladd and M. A. Olsen, Drug Metabolism & Disposition, **21**, 911 (1993).

Item No.	Description	Quantity	Price ($)
M-OPSS-5000	Methoxy-PEG-OPSS, MW 5,000	0.5 g	95
		1 g	150
OPSS-3400	PEG-$(OPSS)_2$, MW 3,400	0.5 g	95
		1 g	150

Other molecular weights are available - see page 6

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